

[Federal Register: September 11, 2002 (Volume 67, Number 176)]  
[Rules and Regulations]  
[Page 57510-57514]  
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[DOCID:fr11se02-5]

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## DEPARTMENT OF TRANSPORTATION

### Federal Aviation Administration

#### 14 CFR Part 39

[Docket No. 2001-NM-34-AD; Amendment 39-12878; AD 2002-18-04]

RIN 2120-AA64

**Airworthiness Directives; Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SP, and 747SR Series Airplanes**

**AGENCY:** Federal Aviation Administration, DOT.

**ACTION:** Final rule.

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**SUMMARY:** This amendment adopts a new airworthiness directive (AD), applicable to certain Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SP, and 747SR series airplanes, that requires one-time inspections for cracking in certain upper deck floor beams and follow-on actions. The actions specified by this AD are intended to find and fix cracking in certain upper deck floor beams. Such cracking could extend and sever floor beams adjacent to the body frame and result in rapid depressurization of the airplane. This action is intended to address the identified unsafe condition.

**DATES:** Effective October 16, 2002.

The incorporation by reference of certain publications listed in the regulations is approved by the Director of the Federal Register as of October 16, 2002.

**ADDRESSES:** The service information referenced in this AD may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. This information may be examined at the Federal Aviation Administration (FAA), Transport Airplane Directorate, Rules Docket, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

**FOR FURTHER INFORMATION CONTACT:** Rick Kawaguchi, Aerospace Engineer, Airframe Branch, ANM-120S, FAA, Seattle Aircraft Certification Office, 1601 Lind Avenue, SW., Renton, Washington 98055-4056; telephone (425) 227-1153; fax (425) 227-1181.

**SUPPLEMENTARY INFORMATION:** A proposal to amend part 39 of the Federal Aviation Regulations (14 CFR part 39) to include an airworthiness directive (AD) that is applicable to certain Boeing Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-200F, 747-300, 747SP, and

747SR series airplanes was published in the Federal Register on January 2, 2002 (67 FR 38). That action proposed to require one-time inspections for cracking in certain upper deck floor beams and follow-on actions.

## Comments

Interested persons have been afforded an opportunity to participate in the making of this amendment. Due consideration has been given to the comments received.

### Supportive Comment

One commenter agrees with the proposed rule.

### Request To Withdraw Proposed Rule

One commenter is concerned with the continuing trend to issue Airworthiness Directives (ADs) that overlap or are in close proximity to other ADs, based on isolated reports of minor structural cracks. The commenter provided the AD numbers for ADs that require inspections and repair of the same structure specified in this proposed rule. The commenter notes that the Boeing 747 Maintenance Program requires visual inspections of the upper deck floor beam of the fuselage frame interface, in addition to those inspections required by the previously issued ADs. The commenter adds that the few reports of upper chord cracking of the floor beam can be adequately detected by the maintenance program inspections before an unsafe condition could develop.

Although the commenter does not make any specific request, the FAA infers that the commenter wants to withdraw the proposed rule. We acknowledge that Boeing Model 747 series airplanes have an extensive service life and that numerous inspections have been performed as part of the FAA-approved 747 maintenance program. (All operators are required to maintain their airplanes in accordance with an FAA-approved maintenance program as required for continued airworthiness.) However, we find that the subject inspections in the maintenance program do not adequately address certain in-service difficulties and thus do not adequately address the identified unsafe condition. Additionally, we do not agree that the cited ADs already require inspections and repair of the same structure specified in this final rule. Therefore, the FAA has determined that the proposed rule is appropriate and warranted.

### Exclude Certain Flight Cycles

One commenter states that the service bulletin referenced in the proposed rule specifies the exclusion of flight cycles with a cabin pressure differential of 2.0 pounds per square inch (psi) or less. The commenter asks that this exclusion be added to the final rule.

We agree with the commenter in that this exclusion is specified in the referenced service bulletin. Paragraph (a) of this final rule has been changed to exclude flight cycles with a cabin pressure differential of 2.0 psi or less, as stated above.

### Reduce Applicability

One commenter asks that all references to Boeing Model 747-200F series airplanes be deleted from the proposed rule. The commenter states that the service bulletin referenced in the proposed rule adds the same inspection of the upper deck floor beams required by AD 98-09-17 for Model 747-200F series airplanes.

We agree with the commenter. AD 98-09-17, amendment 39-10498 (63 FR 20311, April 24, 1998), is applicable to Boeing Model 747-200F and -200C series airplanes. That AD requires repetitive inspections or a one-time inspection to detect cracking of certain areas of the upper deck floor beams; and corrective actions, if necessary. Therefore, we have deleted all references to Model 747-200F from this final rule.

### **Allow Permanent Repairs Specified in Service Information**

One commenter states that paragraph (c) of the proposed rule would require repair of any crack found during the proposed inspections either by a temporary repair, per the referenced service bulletin, or by accomplishing an approved permanent repair. The commenter adds that Note 3 of the proposed rule states that the referenced service bulletin does not contain instructions for permanent repairs; however, page 29 of the service bulletin does contain permanent repair instructions. The commenter notes that paragraph (c)(2) of the proposed rule should be changed to allow permanent repairs to be done per the service bulletin.

We agree with the commenter that the referenced service bulletin does contain permanent repair instructions for floor beam web, strap, and frame cracks, but not upper chord cracks. Therefore, paragraph (c)(2) of this final rule has been changed to specify repair according to the service bulletin, unless the service bulletin specifies contacting the manufacturer. Also, Note 3 has been removed from this final rule and subsequent notes have been renumbered accordingly.

### **Change Certain Wording**

One commenter asks that the wording specified in paragraphs (c)(1)(i), (c)(1)(ii), and (d) of the proposed rule be changed. The commenter states that the words "temporary repair" should be changed to "time-limited repair." The commenter notes that, since a time-limited repair must be replaced with a permanent repair within 18 months or 1,500 flight cycles, this change would ensure that a permanent repair would be installed before the modification is done. The commenter adds that the word "repair" specified in paragraph (d) of the proposed rule should be changed to "permanent repair."

We agree with the commenter. The term "time-limited" repair should be used instead of "temporary" repair, for clarity. We also agree that the post-modification inspection threshold should begin after installation of a permanent repair. Paragraphs (c)(1)(i), (c)(1)(ii), and (d) of this final rule have been changed accordingly.

### **Change Cost Impact**

One commenter asks that the Cost Impact section of the proposed rule be changed. The commenter states that it will take 8 work hours to accomplish the initial inspections, but an additional 22 work hours to gain access and close up in order to accomplish the inspections. The commenter adds that the 24 work hours necessary to accomplish the modification are in addition to the hours for the inspections, and for gaining access and close up.

We do not agree to change the work hours for the initial inspections. The number of work hours necessary to accomplish the inspections, specified as 8 in the cost impact information, is consistent with the service bulletin. This number represents the time necessary to perform only the inspections actually required by this AD. The FAA recognizes that, in accomplishing the requirements of any AD, operators may incur "incidental" costs in addition to the "direct" costs. The cost analysis in AD rulemaking actions, however, typically does not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions. Because incidental costs may vary significantly from operator to operator, they are almost impossible to calculate.

We agree that adding the words "in addition to the inspection" to the 24 work hours for the modification will provide clarification. The cost impact section has been changed accordingly.

### **Change Paragraph (d) of the Proposed Rule**

One commenter asks that paragraph (d) of the proposed rule be changed. The commenter reiterates the requirements in paragraph (d) of the proposed rule and suggests alternatives to that paragraph as follows: 1. Issue the proposed rule only after the referenced service bulletin is revised to include post-modification/repair instructions; 2. Specifically define the inspection requirements and include them in paragraph (d); or 3. Omit paragraph (d) from the proposed rule, and, if necessary, issue a revised or new AD after the service bulletin has been revised.

We do not agree with the commenter. Alternative 1. would delay issuance of the proposed rule, which would not address the unsafe condition in a timely manner. At this time, we do not have the necessary data to incorporate alternative 2. When the manufacturer revises its service bulletin to include post-modification inspections, we can consider approving it as an alternative method of compliance (AMOC) to the final rule. Regarding alternative 3., we have determined that post-modification inspections should be addressed in this final rule; therefore, paragraph (d) of this final rule will not be omitted.

### **Reference Revised Service Information**

One commenter asks that the FAA reference the revised service bulletin that will be issued later, rather than the current issue referenced in the proposed rule. The commenter states that there are inconsistencies and minor errors in the referenced service bulletin.

While we acknowledge the commenter's statements about the accuracy of certain wording in the accomplishment instructions of the service bulletin, we do not concur with the request to reference a service bulletin that has not yet been issued or reviewed and approved by us. The airplane manufacturer is aware of the discrepancies in the service bulletin instructions and may issue a revision of the service bulletin in the future. However, considering the criticality of the unsafe condition noted previously, we find it would be inappropriate to delay the issuance of this AD until a revised service bulletin is available. No change to the final rule is necessary in this regard.

### **Change Certain Sections in the Preamble**

One commenter asks that the sentence in the Summary section of the proposed rule be changed from "This action is intended to address the identified unsafe condition," to "This action is intended to address the identified potential unsafe condition." The commenter also asks that the sentence be changed in the Explanation of Requirements of Proposed Rule section. The commenter states that while a severed upper chord of the upper floor beam would pose an unsafe condition, a chord that has not cracked, but at some time may crack, poses a "potential" unsafe condition.

We acknowledge but do not agree with the commenter's request. The sentence in the Summary section specifies that the action is intended to address the identified unsafe condition. The final rule is necessary to find and fix cracking in certain upper deck floor beams, which is not a "potential" unsafe condition. Additionally, the Explanation of Requirements of Proposed Rule section is not restated in this final rule. No change to the final rule is necessary in this regard.

### **Reduce Compliance Time**

One commenter asks that the compliance time specified in paragraph (a)(1) of the proposed rule be reduced. The commenter states that paragraph (a)(1) of the proposed rule specifies the inspection of airplanes with 22,000 flight cycles or less be accomplished within 1,500 flight cycles after the

effective date of the AD. The commenter notes that the inspection could occur as late as 23,500 flight cycles and adds that paragraph (a)(2) of the proposed rule requires that the inspections be accomplished on airplanes with more than 22,000 flight cycles within 500 flight cycles. The commenter suggests that paragraph (a)(1) of the proposed rule be changed to require the inspection of airplanes within 22,000 flight cycles or less to be accomplished within 1,500 flight cycles after the effective date of the AD, but no later than 22,500 flight cycles.

We do not agree with the commenter. The commenter provides no data to justify its statement that the proposed compliance time should be changed in the manner suggested. In developing an appropriate compliance time for this AD, we considered not only the manufacturer's recommendation, but the degree of urgency associated with addressing the subject unsafe condition, the average utilization of the affected fleet, and the time necessary to perform the inspections. We find that the compliance time required by paragraph (a)(1) of the final rule is an appropriate interval for affected airplanes to continue to operate without compromising safety. No change to the final rule is necessary in this regard.

### **Allow Operators To Change Method of Inspection**

One commenter (the airplane manufacturer) asks that, to avoid confusion, the instructions specified in paragraph (d) of the proposed rule should be changed to allow for operators to change the method of inspection. The commenter suggests that, instead of "Repeat the inspection within \* \* \*" as specified in paragraphs (d)(1) and (d)(2) of the proposed rule, the wording be changed to "Conduct the next inspection within \* \* \*". The commenter states that this wording seems to imply that the operator must continue with the same inspection method.

We do not agree with the commenter that the wording specified in paragraph (d) of the final rule obligates the operator to continue using the same inspection method. However, if the commenter needs further clarification, the clarification can be made in a future revision to the service bulletin. The FAA may then consider approving the bulletin as an AMOC to the final rule. No change to the final rule is necessary in this regard.

### **Conclusion**

After careful review of the available data, including the comments noted above, the FAA has determined that air safety and the public interest require the adoption of the rule with the changes previously described. The FAA has determined that these changes will neither increase the economic burden on any operator nor increase the scope of the AD.

### **Cost Impact**

There are approximately 539 airplanes of the affected design in the worldwide fleet. The FAA estimates that 168 airplanes of U.S. registry will be affected by this AD.

It will take approximately 8 work hours per airplane to accomplish the initial inspections, at the average labor rate of \$60 per work hour. Based on these figures, the cost impact of these required inspections on U.S. operators is estimated to be \$80,640, or \$480 per airplane.

It will take approximately 24 work hours per airplane to accomplish the modification or permanent repair, in addition to the inspection, at the average labor rate of \$60 per work hour. Based on these figures, the cost impact of the required modification or repair on U.S. operators is estimated to be \$241,920 or \$1,440 per airplane.

It will take approximately 8 work hours per airplane to accomplish the post-modification/repair inspections, at the average labor rate of \$60 per work hour. Based on these figures, the cost impact of the required post-modification/repair inspections on U.S. operators is estimated to be \$80,640 or \$480 per airplane, per inspection cycle.

The cost impact figures discussed above are based on assumptions that no operator has yet accomplished any of the requirements of this AD action, and that no operator would accomplish those actions in the future if this AD were not adopted. The cost impact figures discussed in AD rulemaking actions represent only the time necessary to perform the specific actions actually required by the AD. These figures typically do not include incidental costs, such as the time required to gain access and close up, planning time, or time necessitated by other administrative actions.

## **Regulatory Impact**

The regulations adopted herein will not have a substantial direct effect on the States, on the relationship between the national Government and the States, or on the distribution of power and responsibilities among the various levels of government. Therefore, it is determined that this final rule does not have federalism implications under Executive Order 13132.

For the reasons discussed above, I certify that this action (1) is not a "significant regulatory action" under Executive Order 12866; (2) is not a "significant rule" under DOT Regulatory Policies and Procedures (44 FR 11034, February 26, 1979); and (3) will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act. A final evaluation has been prepared for this action and it is contained in the Rules Docket. A copy of it may be obtained from the Rules Docket at the location provided under the caption ADDRESSES.

## **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

## **Adoption of the Amendment**

Accordingly, pursuant to the authority delegated to me by the Administrator, the Federal Aviation Administration amends part 39 of the Federal Aviation Regulations (14 CFR part 39) as follows:

### **PART 39—AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

#### **Sec. 39.13 [Amended]**

2. Section 39.13 is amended by adding the following new airworthiness directive:

# AIRWORTHINESS DIRECTIVE



Aircraft Certification Service  
Washington, DC

U.S. Department  
of Transportation  
**Federal Aviation  
Administration**

*We post ADs on the internet at "[www.airweb.faa.gov/rgl](http://www.airweb.faa.gov/rgl)"*

The following Airworthiness Directive issued by the Federal Aviation Administration in accordance with the provisions of Title 14 of the Code of Federal Regulations (14 CFR) part 39, applies to an aircraft model of which our records indicate you may be the registered owner. Airworthiness Directives affect aviation safety and are regulations which require immediate attention. You are cautioned that no person may operate an aircraft to which an Airworthiness Directive applies, except in accordance with the requirements of the Airworthiness Directive (reference 14 CFR part 39, subpart 39.3).

**2002-18-04 Boeing:** Amendment 39-12878. Docket 2001-NM-34-AD.

**Applicability:** Model 747-100, 747-100B, 747-100B SUD, 747-200B, 747-300, 747SP, and 747SR series airplanes; line numbers 1 through 810 inclusive; certificated in any category; and NOT equipped with a nose cargo door.

**Note 1:** This AD applies to each airplane identified in the preceding applicability provision, regardless of whether it has been modified, altered, or repaired in the area subject to the requirements of this AD. For airplanes that have been modified, altered, or repaired so that the performance of the requirements of this AD is affected, the owner/operator must request approval for an alternative method of compliance in accordance with paragraph (e) of this AD. The request should include an assessment of the effect of the modification, alteration, or repair on the unsafe condition addressed by this AD; and, if the unsafe condition has not been eliminated, the request should include specific proposed actions to address it.

**Compliance:** Required as indicated, unless accomplished previously.

To find and fix cracking in certain upper deck floor beams, which could extend and sever floor beams adjacent to the body frame and result in rapid depressurization of the airplane, accomplish the following:

## Inspections

(a) At the compliance time specified in paragraph (a)(1) or (a)(2) of this AD, as applicable, perform one-time detailed and open-hole high frequency eddy current (HFEC) inspections for cracking in the upper deck floor beams at station (STA) 340 and STA 360, according to Boeing Alert Service Bulletin 747-53A2459, dated January 11, 2001. For the purposes of this AD, flight cycles with a cabin differential pressure of 2.0 psi or less are not calculated into the compliance thresholds specified in this AD. However, all cabin pressure records must be maintained for each airplane, and no fleet averaging of cabin pressure is allowed.

**Note 2:** For the purposes of this AD, a detailed inspection is defined as: "An intensive visual examination of a specific structural area, system, installation, or assembly to detect damage, failure, or irregularity. Available lighting is normally supplemented with a direct source of good lighting at intensity deemed appropriate by the inspector. Inspection aids such as mirror, magnifying lenses, etc., may be used. Surface cleaning and elaborate access procedures may be required."

(1) For airplanes with 22,000 or fewer total flight cycles as of the effective date of this AD: Do the inspections prior to the accumulation of 16,000 total flight cycles, or within 1,500 flight cycles after the effective date of this AD, whichever is later.

(2) For airplanes with more than 22,000 total flight cycles as of the effective date of this AD: Do the inspections within 500 flight cycles after the effective date of this AD.

## **Modification**

(b) If no crack is found during the inspections per paragraph (a) of this AD: Within 5,000 flight cycles after the initial inspections, modify the upper deck floor beams at STA 340 and STA 360, according to Boeing Alert Service Bulletin 747-53A2459, dated January 11, 2001. If this modification is not accomplished before further flight after the inspections required by paragraph (a) of this AD, those inspections must be repeated one time, immediately before accomplishing the modification in this paragraph. If any crack is found during these repeat inspections, before further flight, accomplish paragraph (c)(2) of this AD.

## **Repair**

(c) If any crack is found during the inspections per paragraph (a) of this AD: Before further flight, repair according to either paragraph (c)(1) or (c)(2) of this AD.

(1) Accomplish repairs according to paragraphs (c)(1)(i) and (c)(1)(ii) of this AD.

(i) Accomplish a time-limited repair (including removing certain fasteners and the existing strap, performing open-hole HFEC inspections of the chord and web, stop-drilling web cracks, replacing the outboard section of the web, if applicable, and installing new straps) according to Boeing Alert Service Bulletin 747-53A2459, dated January 11, 2001; except where the service bulletin specifies to contact Boeing for appropriate action, repair according to a method approved by the Manager, Seattle Aircraft Certification Office (ACO), FAA; or according to data meeting the type certification basis of the airplane approved by a Boeing Company Designated Engineering Representative (DER) who has been authorized by the Manager, Seattle ACO, to make such findings. For a repair method to be approved as required by this paragraph, the approval must specifically reference this AD. AND

(ii) Within 18 months or 1,500 flight cycles after installation of the time-limited repair according to paragraph (c)(1)(i) of this AD, whichever is first, do paragraph (c)(2) of this AD.

(2) Accomplish a permanent repair according to Boeing Alert Service Bulletin 747-53A2459, dated January 11, 2001; except where the service bulletin specifies to contact Boeing for appropriate action, repair according to a method approved by the Manager, Seattle ACO; or according to data meeting the type certification basis of the airplane approved by a Boeing Company DER who has been authorized by the Manager, Seattle ACO, to make such findings. For a repair method to be approved as required by this paragraph, the approval must specifically reference this AD.

## **Repetitive Inspections: Post-Modification/Repair**

(d) Within 15,000 flight cycles after modification of the upper deck floor beams per paragraph (b) of this AD, or permanent repair of the upper deck floor beams per paragraph (c) of this AD, as applicable. Perform either open-hole HFEC inspections for cracking of fastener holes common to the upper chord, reinforcement straps, and the body frame; or surface HFEC inspections for cracking along the lower edge of the upper chord of the floor beam at the intersection with the body frame; and repeat these inspections at the interval specified in paragraph (d)(1) or (d)(2) of this AD, as applicable. Perform these inspections and repair any cracking found during these inspections according to a method approved by the Manager, Seattle ACO, or according to data meeting the type certification basis of the airplane approved by a Boeing Company DER who has been authorized by the Manager, Seattle ACO, to make such findings. For an inspection or repair method to be approved as required by this paragraph, the approval must specifically reference this AD.

(1) If the most recent inspection used the surface HFEC method: Repeat the inspection within 1,000 flight cycles.

(2) If the most recent inspection used the open-hole HFEC method: Repeat the inspection every 3,000 flight cycles.

**Note 3:** There is no terminating action at this time for the repetitive post-modification/repair inspections according to paragraph (d) of this AD, and instructions for these inspections are not provided in Boeing Alert Service Bulletin 747-53A2459, dated January 11, 2001.

### **Alternative Methods of Compliance**

(e) An alternative method of compliance or adjustment of the compliance time that provides an acceptable level of safety may be used if approved by the Manager, Seattle ACO. Operators shall submit their requests through an appropriate FAA Principal Maintenance Inspector, who may add comments and then send it to the Manager, Seattle ACO.

**Note 4:** Information concerning the existence of approved alternative methods of compliance with this AD, if any, may be obtained from the Seattle ACO.

### **Special Flight Permits**

(f) Special flight permits may be issued in accordance with sections 21.197 and 21.199 of the Federal Aviation Regulations (14 CFR 21.197 and 21.199) to operate the airplane to a location where the requirements of this AD can be accomplished.

### **Incorporation by Reference**

(g) Except as provided by paragraphs (c)(1)(i), (c)(2), and (d) of this AD, the actions shall be done in accordance with Boeing Alert Service Bulletin 747-53A2459, dated January 11, 2001. This incorporation by reference was approved by the Director of the Federal Register in accordance with 5 U.S.C. 552(a) and 1 CFR part 51. Copies may be obtained from Boeing Commercial Airplane Group, P.O. Box 3707, Seattle, Washington 98124-2207. Copies may be inspected at the FAA, Transport Airplane Directorate, 1601 Lind Avenue, SW., Renton, Washington; or at the Office of the Federal Register, 800 North Capitol Street, NW., Suite 700, Washington, DC.

### **Effective Date**

(h) This amendment becomes effective on October 16, 2002.

Issued in Renton, Washington, on August 30, 2002.

Ali Bahrami,

Acting Manager, Transport Airplane Directorate, Aircraft Certification Service.

[FR Doc. 02-22855 Filed 9-10-02; 8:45 am]

BILLING CODE 4910-13-P